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"Western Treasure -- Deep, Wet Snow"

FEDERAL-STATE COOPERATIVE
SNOW SURVEYS AND IRRIGATION WATER FORECASTS

for

COLORADO RIVER DRAINAGE BASIN

MAY 1, 1948

By

Division of Irrigation, Soil Conservation Service
United States Department of Agriculture
and
Colorado Agricultural Experiment Station

Data included in this report were obtained by the agencies named above in cooperation with the U. S. Forest Service, National Park Service, State Engineers of Colorado, Wyoming and New Mexico and other Federal, State and local organizations.

May 1, 1948

WATER SUPPLY OUTLOOK

COLORADO RIVER DRAINAGE

Snow Cover on the headwaters of the Colorado River and its tributaries in Colorado, as shown by snow surveys on May 1, is above normal. Average snow water content is less than last year except on the San Juan where conditions are much improved. During the month of April snowfall was generally deficient over western Colorado which resulted in considerable snow melt at lower elevations and only a slight increase in snow measurements on high courses. The flow of all major tributary streams is expected to be above average and relatively higher on the Gunnison and San Juan. The summer flow of the Green River in Wyoming will be somewhat higher than indicated April 1. Drought conditions are continuing in Arizona and reservoir storage is low.

The April-September flow of the Colorado River near Grand Canyon is expected to be 11,800,000 acre feet.

COLORADO RIVER AND
TRIBUTARIES IN COLORADO

Colorado River (Above Grand Junction): Average snow cover is 13 percent above normal and 13 percent below last year on the headwaters of the Colorado main stem. The distribution of the snow follows a generally average pattern with a slight deficiency near Willow Creek Pass and relatively high cover on the headwaters of the Blue River and adjacent areas. Recent precipitation has been normal at higher elevations and somewhat deficient in the lower valley. Stream flows were about normal during April, but were rising at the end of the month. Range and crops conditions are good. Soil moisture is excellent except the top few inches in irrigated areas.

Gunnison River: The outlook for summer flow on the Gunnison is unchanged from April 1. It will considerably exceed the 1947 season and the average. Precipitation in the Uncompahgre valley is reported as high and the soil is wet, delaying farming operations. The flow of the Gunnison during April was 112 percent of normal with the Uncompahgre 171 percent. Snow cover on the Taylor and East Rivers is unusually high for May 1. Storage in Taylor Park reservoir is now 88,000 acre feet as compared to 68,000 on May 1, 1947.

Yampa and White Rivers: Snow on the headwaters of the Yampa is now 14 percent above normal and 6 percent below last May 1. Precipitation throughout the winter season has been above normal. The summer flow of this stream will be above average but less than last year. Soil moisture conditions are good. On the White River there was a substantial drop in snow water content on the courses during April and much of the moisture at lower elevations went into the ground. Soil moisture conditions are excellent and the crop outlook is good. The summer discharge of the Elk and Little Snake rivers will be slightly above normal but less than a year ago. Snow on the Wyoming tributaries of the Little Snake is relatively high.

THE
 ANNUAL REPORT
 OF THE
 COMMISSIONER OF THE
 LAND OFFICE

The Commission has the honor to acknowledge the receipt of the report of the Surveyor General of the Land Office, and to express its appreciation of the thorough and efficient manner in which the duties of his office have been performed during the past year. The report contains a full and complete statement of the work done, and of the condition of the land office at the close of the year. It also contains a list of the lands which have been surveyed, and of the amount of land which has been sold, and of the amount of land which has been reserved for the use of the Government. The Commission is pleased to find that the Surveyor General has been able to complete the survey of the lands which were assigned to him at the close of the previous year, and that he has been able to sell a large amount of land, and to reserve a large amount of land for the use of the Government. The Commission is also pleased to find that the Surveyor General has been able to complete the survey of the lands which were assigned to him at the close of the previous year, and that he has been able to sell a large amount of land, and to reserve a large amount of land for the use of the Government.

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San Juan and Animas Rivers: Heavy snow melt occurred on the watershed of the Animas River this past month and all of the snow is gone from lower elevation courses. Stream flow is well above normal. The snow cover in high elevations along the Continental Divide is about the same as April 1 and continued heavy flow on the San Juan and Animas may be expected. Snow water content on the Upper San Juan course near Wolf Creek Pass is 42 inches as compared to an average of 31 for May 1. Soil moisture condition in irrigated areas is excellent except for drying of top soil. Range and crop conditions are good. The summer flow of the San Juan at Rosa, New Mexico is expected to be 1,100,000 acre feet and for the Animas at Durango 700,000. Storage in Vallecito reservoir has dropped sharply during the past month to 20,400 acre feet in anticipation of heavy summer flow in the Los Pinos River.

Dolores River: All of the low snow in the watershed of the Dolores and San Miguel rivers was gone by May 1. Earlier snow surveys indicate that the summer runoff will be somewhat above normal on these streams. Soil moisture is fair due to drying and stream flow is high. Storage in Groundhog and Narraquinepp reservoirs is now 25,710 acre feet as compared to 21,000 a year ago.

GREEN RIVER IN WYOMING

The estimate of summer discharge of the Green River in Wyoming is somewhat improved over April 1. During 1947 summer precipitation was unusually heavy resulting in summer floods during May and June so this seasons' flow will be considerably under last year and about normal. Current stream flow is about average. Soil moisture on lower range areas is short but good at higher elevations. Snow cover as of May 1 is 22 percent above average, but April has been cool at high elevations. The April-September discharge of the Green River at Linwood, Utah is expected to be 1,100,000 acre feet,

COLORADO RIVER AND TRIBUTARIES IN ARIZONA

The drought condition of the past three seasons continues in Arizona. No snow courses have been measured since April 1, but very little snow is left at any elevation. Recent precipitation has been below normal. Stream flow as a result of winter snow is disappointing. Soil moisture in irrigated areas is drying out rapidly. Crop conditions are reported as good for the areas planted. Storage in the four major Salt River Reservoirs now totals 399,000 acre feet, slightly more than a year ago. San Carlos Reservoir contains 14,000 acre feet. On May 1, 1947 it was empty. The sharp decline in average ground water levels in the Salt River Valley is continued and the level now is at the lowest point of record.

Available storage in Lake Mead is now 19,144,000 acre feet. 2,800,000 over May 1, 1947.

The following is a list of the names of the persons who have been appointed to the various committees of the Board of Directors of the City of New York, for the year 1900. The names are given in alphabetical order, and the committees to which they are appointed are given in parentheses. The names of the persons who have been appointed to the same committee are given in the same order as they appear in the list.

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COMMITTEES OF THE BOARD OF DIRECTORS

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COLORADO RIVER DRAINAGE BASIN

STREAM FLOW FORECASTS, May 1, 1948

Basin and Stream	April-Sept., Incl., Streamflow Acre Feet				10-year avg. 1937-1946
	Forecast 1948	Measured Runoff			
		1947	1946	1945	
<u>GREEN</u>					
Green at Linwood, Utah	1,100,000	1,817,000	1,181,000	1,092,640	1,093,000
Little Snake at Lilly	375,000		323,800	447,000	344,000
Elk at Clark	250,000	234,400	184,120	226,000	207,000
Yampa at Steamboat Springs	300,000	322,900	224,600	286,000	253,000
White at Meeker	325,000	404,000	243,000	354,000	298,000
<u>COLORADO</u>					
Colorado at Glenwood Springs	1,700,000	1,880,000	1,143,000	1,402,000	1,403,000
Roaring Fork at Glenwood Springs	900,000	1,008,000	635,000	750,000	716,000
Gunnison at Grand Junction	1,900,000	1,509,000	906,000	1,457,000	1,527,000
Uncompahgre at Colona	250,000	225,000	110,000	174,000	176,000
San Juan at Rosa, N. M.	1,100,000	439,000	280,000	663,000	754,000
Los Pinos Near Bayfield	300,000	135,000	185,000	157,000	255,000
Animas at Durango	700,000	540,000	340,000	465,000	508,000
Dolores at Dolores	400,000	288,000	194,000	306,000	325,000
San Miguel at Naturita	300,000	180,000	133,000	214,000	290,000
Colorado near Grand Canyon	11,800,000	10,986,000	6,505,000	9,562,000	9,609,000

中華民國二十六年
 五月二十日

第一項 總則
 第一條 本會定名為「中華民國會計師公會」

第二條 本會之宗旨在促進會計學術之發達，並謀會計師之福利

第三條 本會之組織，依本法及本會章程之規定

第四條 本會之辦事處設於中華民國首都

第五條 本會之經費，由會員繳納，並得向社會募集

第六條 本會之會員，須具備下列條件：
 一、具有會計師資格
 二、具有中華民國國籍
 三、具有會計師執照
 第七條 本會之會員，分為：
 一、正式會員
 二、準會員
 三、贊助會員
 第八條 本會之會員，應遵守下列規定：
 一、遵守本會章程
 二、遵守會計師法
 三、遵守會計師公會之決議

SNOW SURVEYS AND IRRIGATION WATER FORECASTS

COLORADO RIVER BASIN

STATUS OF RESERVOIR STORAGE, MAY 1, 1948

BASIN AND STREAM	RESERVOIR	USABLE CAPACITY (Thous. A. Ft.)	THOUSANDS OF ACRES FEET IN STORAGE				May 1, 1948		
			About May 1		10-yr. Avg. 1937-46	% Cap.	% Avg.		
			1948	1947				1946	1945
COLORADO DRAINAGE									
Taylor River	Taylor Park	106.2	87.8	68.0	90.9	65.4	66.6	83	132
Los Pinos River	Vallecito	126.3	20.4	66.2	58.7	19.3	44.1	16	46
Groundhog Creek	Groundhog	21.7	16.7	12.0	---	8.0	9.7	77	172
Blue River	Green Mountain	146.9	50.7	61.0	56.2	49.6	51.3	35	99
Colorado River	Lake Mead	27935.0	19144.0	16283.0	17863.0	20975.0	18493.9	69	104
Colorado River	Lake Havasu	683.0	666.8	657.6	---	647.5	539.7	97	124
SALT AND GILA DRAINAGE									
Salt River	Roosevelt	1381.6	153.2	44.4	299.8	788.4	742.1	11	21
"	Horse Mesa	245.1	155.0	237.5	223.8	239.1	216.0	63	72
"	Mormon Flat	57.8	43.1	47.3	48.1	52.7	46.8	75	92
"	Stewart Mt.	69.8	47.4	57.3	45.2	60.4	53.4	68	89
Verde River	Bartlett	179.5	21.3	0	17.5	113.1	100.0	12	21
Agua Fria River	Carl Pleasant	173.0	---	---	3.6	29.6	46.6	---	---
Gila River	San Carlos	1200.0	14.4	0.4	14.7	122.9	276.9	1	5

*Some for shorter periods.

*Some for shorter periods

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SNOW SURVEYS AND IRRIGATION WATER FORECASTS
for

COLORADO RIVER BASIN

May 1, 1948

SUMMARY OF MAY 1 SNOW SURVEYS AND COMPARISONS OF DATA WITH THAT OF PREVIOUS YEARS BY WATERSHEDS

WATERSHEDS	Snow Depth		Water Content		Number Courses in Average	Snow Density		1948 Water Content	
	Thirteen 1947		Thirteen 1947			Thirteen 1947		Thirteen 1947	
	year Avg. *	1948	year Avg. *	1948		year Avg. *	1948	year Avg. *	1948
COLORADO RIVER	In.	In.	In.	In.		Percent	Percent		
Colorado River**	36.1	46.2	12.9	14.6	22	36	37	113	87
Yampa River	32.6	40.0	13.8	15.7	4	42	43	114	94
White River	31.2	44.4	12.2	12.6	2	39	36	103	72
Roaring Fork	25.6	33.5	9.5	10.8	3	37	36	114	81
Gunnison River	39.3	43.3	15.3	18.0	8	38	40	113	104
Uncompahgre River	25.2	28.3	9.5	9.3	1	33	39	98	87
Dolores River	4.6	0.0	1.5	0.0	1	32	---	---	---
San Juan River	29.2	13.8	12.7	15.7	5	43	48	123	212
Animas River	12.5	9.6	4.7	3.1	3	38	39	66	86
Green River	20.8	30.4	7.7	9.3	5	37	36	120	79

**Above Grand Junction *Some for shorter periods.

P R E C I P I T A T I O N D A T A

WATERSHED	STATE	Precipitation*		Departure from Normal		Precipitation*		Departure from Normal	
		October 1 to April 30	Inches	Normal	Inches	April	Inches	Inches	Inches
Colorado	Colorado	12.60	12.60	+1.73	1.70	1.70	+0.28	+0.28	+0.28
Green	Wyoming	6.02	6.02	+0.27	1.19	1.19	+0.02	+0.02	+0.02
San Juan	New Mexico	5.38	5.38	-0.36	0.34	0.34	-0.55	-0.55	-0.55
Colorado	Arizona	7.51	7.51	-0.94	0.16	0.16	-0.76	-0.76	-0.76
Gila	New Mexico	4.52	4.52	-1.27	0.01	0.01	-0.66	-0.66	-0.66

*Precipitation tentative

COLORADO RIVER SNOW SURVEYS, May 1, 1948

DRAINAGE BASIN and SNOW COURSE		LOCATION				SNOW COURSE MEASUREMENTS				
		No. and State	Sec.	Twp.	Range Elev.	Date of Survey	Snow Depth (Inches)	Water Content (Inches)		Past Record Av. Water Content (Inches)
COLORADO RIVER (Above Grand Junction)										
Park View*	7 Colo.	24	5N	78W	9200	4/30	19.7	10.9	1.8	13
Phantom Valley	12 "	7	5N	75W	9300	5/2	17.5	10.4	0.0	13
Berthoud Pass	16 "	35	2S	75W	9700	5/3	41.4	20.3	5.3	13
Tennessee Pass*	19 "	21	8S	80W	10200	4/30	24.1	8.6	0.0	13
Ind. Pass Tunnel	33 "	30	11S	82W	10200	4/30	54.6	27.4	15.2	13
N. Lost Trail Cr.	34 "	20	11S	87W	9200	5/3	30.1	10.6	0.0	13
M. Fork Camp Gr.	37 "	16	3S	77W	9000	4/29	16.7	10.7	0.0	13
Fiddler Gulch	44 "	1	8S	80W	11000	4/30	50.4	19.5	---	12
West	45 "	1	9S	83W	8700	4/30	5.0	2.3	0.0	13
Mesa Lakes	50 "	35	11S	96W	10000	4/30	47.2	18.5	4.5	12
Tulu	59 "	25	6N	76W	10200	4/24	57.6	21.6	12.2	9
Willow Creek P.	62 "	1	4N	78W	9500	4/29	34.0	16.1	5.0	11
N. Inlet Grand L.	64 "	26	4N	75W	9000	5/1	21.5	10.9	0.0	11
Lake Irene	65 "	8	5N	75W	10600	4/30	63.9	27.1	15.2	11
Thunderbolt Peak	66 "	22	2N	74W	9500	5/1	45.9	15.3	9.7	11
Arrow	69 "	34	1S	75W	9900	5/3	24.2	11.2	0.0	11
Lapland	70 "	16	2S	76W	9300	4/29	25.9	13.1	0.4	11
Fremont Pass #2	79 "	2	8S	79W	11400	4/29	61.4	22.0	13.0	13
Trickle Divide	85 "	23	11S	94W	10000	4/29	75.4	33.5	19.9	9
Lynx Pass No. 2	91 "	27	2N	83W	9100	4/29	27.6	16.0	0.7	13
Shrine Pass	96 "	15	6S	79W	10500	4/29	58.1	23.2	12.8	7
Grizzly Peak	97 "	2	5S	76W	11250	4/28	62.0	23.0	11.9	7
Ivanhoe	100 "	12	9S	82W	10400	4/27	49.7	19.7	8.9	3
Glen-Mar Ranch	102 "	31	12S	77W	8850	4/29	14.8	8.6	---	2
				Average for drainage			39.3	16.9	6.1	
YAMPA RIVER										
Dry Lake	6 Colo.	26	7N	84W	8200	4/30	35.5	18.5	0.0	13
Columbine Lodge*	8 "	21	5N	82W	9300	4/30	52.5	20.0	10.9	13
Elk River	9 "	6	10N	85W	8700	4/30	32.1	12.4	4.6	13
Lynx Pass No. 2*	91 "	27	2N	83W	9100	4/29	27.6	16.0	0.7	13
				Average for drainage			36.9	16.7	4.0	
WHITE RIVER										
Burro Mountain	35 Colo.	15	2S	91W	9000	4/30	41.5	20.3	6.1	13
Rio Blanco	36 "	28	1N	86W	8500	4/30	29.0	14.5	1.3	13
				Average for drainage			35.2	17.4	3.7	

*On adjacent drainage

COLORADO RIVER SNOW SURVEYS, May 1, 1948

DRAINAGE BASIN and SNOW COURSE	LOCATION			SNOW COURSE MEASUREMENTS							
	No. and State	Sec.	Twp. Lat.	Range Long.	Elev.	Date of Survey	Snow Depth (Inches)	Water Content (Inches)			Past Record Av. Water Content (Inches)
								1948	1947	1946	
COLORADO RIVER											
ROARING FORK											
Ind. Pass Tunnel	33 Colo.	30	11S	82W	10200	4/30	54.6	20.3	27.4	15.2	17.1
N. Lost Trail Cr.	34 "	20	11S	87W	9200	5/3	30.1	10.9	10.6	0.0	10.2
Nast	45 "	1	9S	83W	8700	4/30	5.0	1.2	2.3	0.0	4.4
Ivanhoe	100 "	12	9S	82W	10400	4/25	49.7	18.7	19.7	8.9	15.4
			Average for drainage				29.9	10.8	13.4	5.1	9.5
GUNNISON RIVER											
Crested Butte	18 Colo.	22	13S	86W	9000	4/30	22.5	10.4	12.1	11	6.8
Marshall Creek	42 "	24	48N	6E	10300	5/2	37.4	12.3	12.1	1.9	10.3 (1)
Poncha Creek*	43 "	19	48N	7E	10500	5/2	35.4	11.7	11.1	1.3	8.4 (1)
Park Cone	46 "	19	14S	82W	9700	5/1	35.4	13.9	9.0	1.0	4.7
Alexander Lake	53 "	2	12S	95W	10000	4/29	66.6	27.0	25.8	12.4	24.4
Snowshoe Mesa	55 "	14	13S	89W	7500	4/29	12.4	6.6	0.0	0.0	1.2
Ironton Park	58 "	29	43N	7W	9300	4/30	23.6	9.3	10.7	0.0	9.5
Trickle Divide	85 "	23	11S	94W	10000	4/29	75.4	30.3	33.5	19.9	31.9
Park Reservoir	87 "	34	11S	94W	9500	4/29	64.4	26.8	28.7	13.8	26.7
Porphyry Creek	89 "	19	49N	6E	10800	4/29	54.4	19.4	18.9	7.6	17.4
Kannah Creek	101 "	5	12S	95W	10700	4/29	73.5	29.6	29.3	---	29.4
Lake City	104 "	13	43N	4W	10700	5/1	13.7	4.2	---	---	---
			Average for drainage				44.4	18.0	17.3	6.8	15.3
UNCOMPAHGRE RIVER											
Ironton Park	58 Colo.	29	43N	7W	9800	4/30	23.6	9.3	10.7	0.0	9.5
SAN JUAN RIVER											
Wolf Creek Pass*	26 Colo.	4	37N	2E	10000	4/30	75.0	36.0	17.5	10.6	26.8
Upper San Juan	29 "	10	37N	1E	10000	4/30	88.6	42.3	19.7	14.1	31.1
Silverton Sub.S.	30 "	10	41N	7W	9400	5/1	0.0	0.0	0.0	0.0	1.4
Cascade	31 "	12	39N	9W	8350	5/1	0.0	0.0	0.0	0.0	3.1
Granite Peaks	93 "	24	37N	6W	7950	5/1	0.0	0.0	0.0	0.0	1.1
			Average for drainage				32.7	15.7	7.4	4.9	12.7

*On adjacent drainage

(1) Not included in average

TABLE 1. SUMMARY OF DATA

TABLE 2. SUMMARY OF DATA

TABLE 3. SUMMARY OF DATA

TABLE 4. SUMMARY OF DATA

TABLE 5. SUMMARY OF DATA

TABLE 6. SUMMARY OF DATA

TABLE 7. SUMMARY OF DATA

TABLE 8. SUMMARY OF DATA

TABLE 9. SUMMARY OF DATA

TABLE 10. SUMMARY OF DATA

TABLE 11. SUMMARY OF DATA

TABLE 12. SUMMARY OF DATA

TABLE 13. SUMMARY OF DATA

COLORADO RIVER SNOW SURVEYS, May 1, 1948

LOCATION				SNOW COURSE MEASUREMENTS								
DRAINAGE BASIN and SNOW COURSE	No. and State	Sec.	Twp.	Range	Elev.	Date of Survey	Snow Depth (Inches)	Water Content (Inches)			Years of Record	Past Record Av. Water Content (Inches)
								1943	1947	1946		
COLORADO RIVER												
DOLORES RIVER												
Rico	23 Colo.	11	39N	11W	8700				0.0	0.0	13	1.4
Telluride	24 "	6	42N	8W	8600	5/1	0.0		0.0	0.0	13	1.5
Lizard Head	25 "	24	41N	10W	10300				11.1	9.0	13	15.3
			Average for drainage				0.0		0.0	0.0		1.5
ANIMAS RIVER												
Silverton SS	30 Colo	10	41N	7W	9400	5/1	0.0		0.0	0.0	13	1.4
Cascade	31 "	12	39N	9W	8850	5/1	0.0		0.0	0.0	13	3.1
Ironton Park*	58 "	29	43N	9W	9800	4/30	23.6		9.3	0.0	12	9.5
			Average for drainage				7.9		3.1	0.0		4.7
GREEN RIVER												
Dutch Joe R.S.	23 Wyo.	33	31N	104W	8700	4/30	12.3		4.3	0.0	13	3.3
Mulligan Park	24 "	17	35N	108W	8900	5/1	17.9		4.6	1.2	13	6.2
Kendall R.S.	25 "	23	38N	110W	7900	5/1	12.8		4.0	2.7	13	5.0
Loomis Park	26 "	14	37N	111W	8500	5/1	28.2		11.3	3.8	13	9.4
Snyder Basin R. S.	27 "	15	29N	114W	8040	4/29	23.5		10.4	8.6	13	7.0
Piney La Barge	28 "	19	29N	114W	8820	4/29	43.0		15.0	11.0	13	12.8
			Average for drainage				26.0		9.3	4.9		7.7

*On adjacent drainage

The following organizations cooperate in the snow surveys and irrigation water supply forecasts for the Colorado, Missouri-Arkansas and Rio Grande watersheds by furnishing funds or services.

STATE

Colorado State Engineer
Wyoming State Engineer
Utah State Engineer
New Mexico State Engineer
Montana State Engineer
Nebraska State Engineer
Colorado Experiment Station
Colorado Extension Service
Montana Experiment Station
Utah Experiment Station

FEDERAL

Department of Agriculture
Forest Service
Soil Conservation Service
Department of Interior
Bureau of Reclamation
Geological Survey
National Park Service
Department of Commerce
Weather Bureau
War Department
Army Engineer Corps

PUBLIC UTILITIES

Colorado Public Service Company
Western Colorado Power Company
Montana Power Company
Public Service Company of New Mexico
Denver and Rio Grande Western R. R. Company

MUNICIPALITIES

City of Bozeman
City of Denver
City of Boulder

WATER USERS ORGANIZATIONS

Poudre Valley Water Users' Association
Arkansas Valley Ditch Association
Colorado River Water Conservation District

IRRIGATION PROJECTS

Farmers Reservoir and Irrigation Company
San Luis Valley Irrigation District
Santa Maria Reservoir Company
Costilla Land Company
Uncompahgre Valley Water Users' Association
Wyoming Development Company
Goshen Irrigation District
Kendrick Project
Pathfinder Irrigation District
Salt River Valley Water Users' Association
San Carlos Irrigation and Drainage District
Twin Lakes Reservoir and Canal Company

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